

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

Claim 1 (Currently Amended): An isolated microorganism which extracellularly secretes an unsaturated fatty acid-containing lipid as lipid vesicles encapsulating said lipid, wherein said microorganism is ~~*Mortierella elongata* SAM 0219~~ or *Mortierella alpina* SAM 2241 or *Mortierella alpine* SAM 2242.

Claim 2 (Currently Amended): The microorganism according to claim 1, wherein said unsaturated fatty acids are fatty acids having 18 carbons or more and two or more double bonds.

Claims 3-6 (Canceled).

Claim 7 (Previously Presented): The microorganism according to claim 1, which has a property of forming lipid vesicles containing a lipid around the colonies when said microorganism is grown on a solid medium, and/or of making the culture liquid cloudy when said microorganism is cultured in a transparent liquid medium.

Claim 8 (Previously Presented): The microorganism according to claim 1, which is selected by subjecting a microorganism having an ability to accumulate an

unsaturated fatty acid-containing lipid in the cell to mutation, gene manipulation or cell fusion.

Claim 9 (Previously Presented): The microorganism according to claim 1, which is selected by subjecting a microorganism having an ability of accumulating an unsaturated fatty acid-containing lipid in the cell to mutation, gene manipulation or cell fusion,

culturing the obtained strains on a solid medium to select strains of which colonies are covered with lipid-containing lipid vesicles at the periphery, and

then selecting those strains that make the culture liquid cloudy when said microorganism is cultured in a transparent liquid medium.

Claim 10 (Previously Presented): The microorganism according to claim 1, which can be turned into a spheroplast or a protoplast.

Claim 11 (Currently Amended): An isolated microorganism having a property of extracellularly secreting a lipid as lipid vesicles encapsulating said lipid, wherein said lipid contains unsaturated fatty acids, wherein said microorganism is *Mortierella elongata* SAM 0219 or *Mortierella alphina* SAM 2241 or *Mortierella alpine* SAM2442.

Claim 12 (Previously Presented): The microorganism according to claim 1, wherein said extracellularly secreted lipid is a lipid in which 50% or more is triglyceride.

Claim 13 (Previously Presented): The microorganism according to claim 1, wherein said unsaturated fatty acids are arachidonic acid.

Claim 14 (Currently Amended): The microorganism according to claim 13, wherein said lipid contains 10% or more arachidonic acid relative to the total fatty acids.

Claim 15 (Withdrawn): Lipid vesicles encapsulating an unsaturated fatty acid-containing lipid.

Claim 16 (Withdrawn): The lipid vesicles according to claim 15 wherein said unsaturated fatty acids are unsaturated fatty acids having 18 or more carbons and two or more double bonds.

Claim 17 (Withdrawn): The lipid vesicles according to claim 15, wherein said lipid vesicles are produced by a microorganism.

Claim 18 (Withdrawn): Lipid vesicles encapsulating a lipid obtained from a culture liquid prepared by culturing the microorganism according to claim 1 in a liquid medium.

Claim 19 (Withdrawn): The lipid vesicles according to claim 15, which can be uniformly dispersed in water or a hydrophilic substance.

Claim 20 (Withdrawn): The lipid vesicles according to claim 15, which stably retains the lipid encapsulated within said lipid vesicles against oxidation.

Claim 21 (Withdrawn): The lipid vesicles according to claim 15, which can be separated by centrifugation.

Claim 22 (Withdrawn): The lipid vesicles according to claim 15, wherein the membrane of said lipid vesicles comprises sugar, protein, and lipid.

Claim 23 (Withdrawn): The lipid vesicles according to claim 15, which has an average diameter of 0.2 to 10  $\mu\text{m}$ .

Claim 24 (Withdrawn): The lipid vesicles according to claim 15, wherein the lipid encapsulated in said lipid vesicles is a lipid in which 50% or more is triglyceride.

Claim 25 (Withdrawn): A lipid isolated from the lipid vesicles according to claim 15.

Claim 26 (Withdrawn): A food, a cosmetic, or an animal feed comprising the lipid vesicles according to claim 15 added thereto.

Claim 27 (Withdrawn): The food according to claim 26 wherein the food comprising the lipid vesicles added thereto is a functional food, a nutrient

supplement, formula for premature infants, modified milk for babies, a baby food, a food for pregnant women or a food for the aged people.

Claim 28 (Withdrawn): The food according to claim 26 wherein the foods to which the lipid vesicles have been added are beverages.

Claim 29 (Withdrawn): A food, a cosmetic, a pharmaceutical or an animal feed comprising the lipid according to claim 25 added thereto.

Claim 30 (Currently Amended): A method of producing lipid vesicles<sub>1</sub> which method comprises culturing the microorganism of claim 1 in a liquid medium and then collecting the lipid vesicles encapsulating a lipid from the culture liquid.

Claim 31 (Currently Amended): A method of producing lipid vesicles<sub>1</sub> which method comprises continuously culturing the microorganism of claim 1 in a liquid medium and then continuously collecting the lipid vesicles encapsulating a lipid from the culture liquid.

Claim 32 (Currently Amended): A method of producing a lipid<sub>1</sub> which method comprises culturing the microorganism of claim 1 in a liquid medium, collecting lipid vesicles encapsulating a lipid from the culture liquid, and separating a lipid containing fatty acids from said lipid vesicles.

Claim 33 (Currently Amended): A method of producing unsaturated fatty acids, which method comprises culturing the microorganism of claim 1 in a liquid medium, collecting lipid vesicles encapsulating a lipid from the culture liquid, separating the lipid containing fatty acids from said lipid vesicles, and isolating the unsaturated fatty acids from said lipid.

Claim 34 (Currently Amended): An isolated microorganism, wherein said microorganism is ~~*Mortierella elongata* SAM 0219~~ or *Mortierella alpina* SAM 2241 or *Mortierella alpine* SAM2242 having a property of extracellularly secreting a lipid as lipid vesicles encapsulating said lipid, wherein said lipid contains unsaturated fatty acids that have 18 carbons and three or more double bonds or 20 or more carbons and two or more double bonds.

Claims 35-36 (Canceled).

Claim 37 (Previously Presented): The microorganism according to claim 34, which has a property of forming lipid-containing lipid vesicles around the colonies thereof when said microorganism is grown on a solid medium, and/or of making the culture liquid cloudy when said microorganism is cultured in a transparent liquid medium.

Claim 38 (Currently Amended): The microorganism according to claim 34, obtained by subjecting a microorganism which has an ability of intracellularly accumulating a lipid containing fatty acids that have 18 carbons and three or more

double bonds or 20 or more carbons and two or more double bonds, to mutation, gene manipulation or cell fusion.

Claim 39 (Currently Amended): The microorganism according to ~~claims 35~~ claim 34, obtained by subjecting a microorganism which has an ability of intracellularly accumulating a lipid containing fatty acids that have 18 carbons and three or more double bonds or 20 or more carbons and two or more double bonds, to mutation, gene manipulation or cell fusion, and

selecting, from the strains obtained, strains that make the culture liquid cloudy and then separates a lipid layer when cultured in a transparent liquid medium.

Claim 40 (Previously Presented): The microorganism according to claim 34, which can be turned into a spheroplast or a protoplast.

Claim 41 (Previously Presented): The microorganism according to claim 34, wherein said extracellularly secreted lipid is a lipid in which 50% or more is triglyceride.

Claim 42 (Currently Amended): A method of producing a lipid containing unsaturated fatty acids, which method comprises culturing the microorganism ~~according to~~ of claim 34 in a liquid medium and collecting the lipid from the culture liquid.

Claim 43 (Currently Amended): A method of producing a lipid containing unsaturated fatty acids, which method comprises continuously culturing the microorganism ~~according to~~ of claim 34 in a liquid medium and then continuously collecting the lipid from the culture liquid.

Claim 44 (Canceled).

Claim 45 (Withdrawn): The screening method according to claim 74 wherein said unsaturated fatty acids have 18 carbons and three or more double bonds or 20 or more carbons and two or more double bonds.

Claim 46 (Withdrawn): The screening method according to claim 74 wherein said microorganism is a filamentous fungus.

Claim 47 (Withdrawn): A screening method wherein strains having a property of extracellularly secreting an unsaturated fatty acid-containing lipid are selected by subjecting a microorganism having an ability to accumulate the unsaturated fatty acid-containing lipid in the cell to mutation, gene manipulation or cell fusion, and

culturing the strains obtained on a solid medium to determine strains of which colonies are covered with lipid-containing lipid vesicles at the periphery.



Claim 48 (Withdrawn): A screening method wherein strains having a property of extracellularly secreting an unsaturated fatty acid-containing lipid are selected by

subjecting a microorganism having an ability to accumulate the unsaturated fatty acid-containing lipid in the cell to mutation, gene manipulation or cell fusion,

culturing the strains obtained on a solid medium to select strains of which colonies are covered with lipid-containing lipid vesicles at the periphery, and

further culturing the selected strains in a transparent liquid medium to determine strains for which the culture liquid becomes cloudy.

Claim 49 (Withdrawn): The screening method according to claim 47, wherein said microorganism is subject to mutation treatment with N-methyl-N'-nitro-N-nitrosoguanidine (NTG).

Claim 50 (Canceled).

Claim 51 (Withdrawn): A microorganism selected by the screening method according to claim 74.

Claim 52 (Previously Presented): The microorganism according to claim 34, wherein said unsaturated fatty acid is selected from the group consisting of  $\gamma$ -linolenic acid, arachidonic acid, 4,7,10,13,16,19-docosahexaenoic acid (DHA) and  $\omega$ 9 highly unsaturated fatty acids.

Claim 53 (Canceled).

Claim 54 (Currently Amended): The microorganism according to claim 4 34, wherein at least one of a reaction in the microorganism selected from the group consisting of  $\Delta 5$  desaturation reaction,  $\Delta 6$  desaturation reaction,  $\Delta 9$  desaturation reaction,  $\Delta 12$  desaturation reaction,  $\omega 3$  desaturation reaction and chain elongation reaction is enhanced, or reduced or missing.

Claims 55-56 (Canceled).

Claim 57 (Previously Presented): The microorganism according to claim 8, which is selected by subjecting a microorganism having an ability of accumulating an unsaturated fatty acid-containing lipid in the cell to mutation, gene manipulation or cell fusion,

culturing the obtained strains on a solid medium to select strains of which colonies are covered with lipid-containing lipid vesicles at the periphery, and

then selecting those strains that make the culture liquid cloudy when said microorganism is cultured in a transparent liquid medium.

Claim 58 (Previously Presented): The microorganism according to claim 2, wherein said unsaturated fatty acids are arachidonic acid.

Claim 59 (Withdrawn): The lipid vesicles according to claim 15 wherein said unsaturated fatty acids are unsaturated fatty acids that have 18 carbons and three or more double bonds or 20 or more carbons and two or more double bonds.

Claim 60 (Withdrawn): Lipid vesicles encapsulating a lipid obtained from a culture liquid prepared by culturing the microorganism according to claim 55 in a liquid medium.

Claim 61 (Withdrawn): The lipid vesicles according to claim 60, wherein the lipid encapsulated in said lipid vesicles is a lipid in which 50% or more is triglyceride.

Claim 62 (Withdrawn): A lipid isolated from the lipid vesicles according to claim 62.

Claim 63 (Withdrawn): A food, a cosmetic, or an animal feed comprising the lipid vesicles according to claim 61 added thereto.

Claim 64 (Withdrawn): A food, a cosmetic, a pharmaceutical or an animal feed comprising the lipid according to claim 62 added thereto.

Claims 65-66 (Canceled).

Claim 67 (Currently Amended): A method of producing a lipid, which method comprises culturing the microorganism according to claim ~~57~~ 34 in a liquid medium,

collecting lipid vesicles encapsulating a lipid from the culture liquid, and separating a lipid containing fatty acids from said lipid vesicles.

Claim 68 (Currently Amended): A method of producing unsaturated fatty acids, which method comprises culturing the microorganism according to claim ~~56~~ 34 in a liquid medium, collecting lipid vesicles encapsulating a lipid from the culture liquid, separating the lipid containing fatty acids from said lipid vesicles, and isolating the unsaturated fatty acids from said lipid.

Claims 69-73 (Canceled).

Claim 74 (Withdrawn): A screening method for determining whether a microorganism has an ability of extracellularly secreting a lipid containing unsaturated fatty acids comprising

culturing a microorganism in a transparent liquid medium, and  
determining whether the culture liquid becomes cloudy.

Claim 75 (Withdrawn): A screening method according to claim 74, wherein the microorganism is selected from genus *Mortierella*.

Claim 76 (Withdrawn): A screening method wherein strains having a property of extracellularly secreting an unsaturated fatty acid-containing lipid are selected by subjecting a microorganism having an ability to accumulate the

unsaturated fatty acid-containing lipid in the cell to mutation, gene manipulation or cell fusion, and

culturing the strains obtained on a solid medium to select strains of which colonies are covered with lipid-containing lipid vesicles at the periphery.

Claim 77 (Withdrawn): The screening method according to claim 48, wherein said microorganism is subject to mutation treatment with N-methyl-N'-nitro-N-nitrosoguanidine (NTG).

Claim 78 (Canceled).

Claim 79 (Withdrawn): A microorganism selected by the screening method according to claim 47.

Claim 80 (Withdrawn): A microorganism selected by the screening method according to claim 48.